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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/723,643
Filing Date: November 24, 2003
Appellant(s): RAMAMOORTHY, SUNDARESAN

Ramamoorthy
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 26, 2009 appealing from the Office action mailed November 26, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,089,281	Kazemi	8-2006
6,523,026	Hickman et al.	2-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being obvious over Kazemi (US 7,089,281) in view of Hickman et al. – hereinafter Hickman (US 6,523,026).

As per claim 1, Kazemi discloses a method of dynamically balancing load in a system of servers, comprising:

a) monitoring for servers that are able to respond to requests directed at the system; (Col 2 lines 3-22, Col 15 line 64 – Col 16 line 8)

b) determining a performance metric for a first set of said servers discovered by said monitoring for the servers; (Col 5 line 62 – Col 6 line 8; storage servers 210 is interpreted as a first set of said servers; Col 6 lines 25-40)

c) maintaining a table comprising said performance metric for said discovered servers; and (Col 16 lines 17-24)

d) in response to receiving a request, routing said request to a selected server in the system of servers based on said performance metric, wherein the system of servers comprises the first set of discovered servers. (Col 16 lines 48-57)

Kazemi fails to disclose including actively discovering new servers in said system of servers. Hickman discloses including actively discovering new servers in said system of servers. (Col 3 lines 4-11, Col 4 lines 15-41) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of discovering new server in the system of servers, or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 2, Kazemi / Hickman discloses the method of claim 1 discloses further comprising: determining a load on ones of the servers in the system of servers. (Kazemi, Col 16 lines 48-57)

As per claim 3, Kazemi / Hickman discloses the method of claim 2, further comprising: determining a stress factor for a given server based on the performance metric of the given server and the load on the given server. (Kazemi, Col 15 lines 49-63)

As per claim 4, Kazemi / Hickman discloses the method of claim 1, further comprising: determining a stress factor for ones of the servers in the system of servers based on the performance metrics. (Kazemi, Col 15 lines 49-63, Col 16 lines 48-57)

As per claim 5, Kazemi / Hickman discloses the method of claim 1, wherein the performance metric is a response time. (Kazemi, Col 6 lines 25-40)

As per claim 6, Kazemi / Hickman discloses the method of claim 1, wherein the performance metric is a response time when the servers discovered by said monitoring are unloaded. (Kazemi Col 6 lines 25-40)

As per claim 7, Kazemi / Hickman discloses the method of claim 2, further comprising: determining a stress factor for a given server based on the performance metric of the given server and the load on the given server. (Kazemi, Col 16 lines 17-24)

As per claim 8, Kazemi discloses a method of dynamically balancing load, comprising:

a) dynamically discovering a first set of servers that are able to respond to requests directed at a system; (Col 5 line 62 – Col 6 line 8; storage servers 210 is interpreted as a first set of said servers; Col 15 line 49 – Col 16 line 8)

b) determining a response time of each of the first set of discovered servers; (Col 6 lines 25-40)

c) calculating stress factors for each of the first set of discovered servers, based in part on said response time; (Col 15 lines 49-63)

d) receiving a request to the system; (Col 16 lines 17-24)

e) determining a server in the system to route the request to based on the stress factors, wherein the system comprises the first set of discovered servers; and (Col 16 lines 17-24)

f) routing said request to said server in the system determined in said e). (Col 16 lines 17-24)

Kazemi fails to disclose actively discovering new servers of said system. Hickman discloses discovering new servers of said system. (Col 3 lines 4-11, Col 4 lines 15-41) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of discovering new server in the system of servers, or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 9, Kazemi / Hickman discloses the method of claim 8, wherein said b) comprises determining a response time for each of the first set of discovered servers to a request. (Kazemi, Col 6 lines 25-40)

As per claim 10, Kazemi / Hickman discloses the method of claim 8, wherein said b) comprises determining a response time for each of the first set of discovered servers to a database query. (Kazemi, Col 6 lines 25-40)

As per claim 11, Kazemi / Hickman discloses the method of claim 8, wherein said c) comprises calculating the stress factor for each of the first set of discovered servers, based on said response time and a load for each of the first set of discovered servers. (Kazemi, Col 15 lines 49-63)

As per claim 12, Kazemi / Hickman disclose the method of claim 8. Kazemi discloses further said b) further comprises determining a response time of a second set of discovered servers not discovered in said a); said c) comprises calculating stress factors for each of the second set of discovered servers not discovered in said a), (Col 6 lines 25-40, Col 15 lines 49-63, calculates stress and response time for each server once discovered). Kazemi fails to disclose wherein the system further comprises the second set of discovered servers not discovered in said a). Hickman discloses wherein the system further comprises the second set of discovered servers not discovered in said a). (Col 4 lines 15-41, Col 29 lines 15-21) In reference to *KSR International Co. v. Teleflex Inc.*, 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of disclosing the second set of discovered servers not discovered in said a), or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 13, Kazemi / Hickman disclose the method of claim 12. Kazemi fails to discloses wherein said second set of discovered servers not discovered in said

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a) are reported to a load balancing agent in a configuration file. Hickman discloses wherein said second set of discovered servers not discovered in said a) are reported to a load balancing agent in a configuration file. (Col 11 lines 25-36, Figure 3) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would be obvious and yielded predictable results to combine the element of a node of the shepherd having maintains the official versions of the system configuration, consisting of precisely the clusters, the assignments of bases to the clusters, the state of all the bases, and the fragment map with the load balancer of Kazemi to achieve the predictable results of load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 14, Kazemi discloses a system for balancing load, comprising:

a plurality of back-end servers that are able to service requests to the system;

(Col 16 lines 17-24; Figure 2:item 210)

a front-end server having a load balancing agent comprising a table, wherein said front-end server receives requests that are forwarded to said back-end servers, and wherein said load balancing agent is operable to: (Col 16 lines 17-24, Col 16 lines 48-57)

monitor for back-end servers that are able to service requests to the system; (Col 15 line 64 – Col 16 line 8)

determine a performance metric for the back-end servers discovered by the monitoring; and (Col 6 lines 25-40)

determine a server of said back-end servers to route a request to based on the performance metric. (Col 16 lines 48-57)

Kazemi fails to disclose including actively discovering new back-end servers. Hickman discloses actively discovering new back-end servers. (Col 3 lines 4-11, Col 4 lines 15-41, Col 8 lines 14-18) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would been obvious and yielded predictable results to combine the element of actively discovering new back-end server, or cluster in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

As per claim 15, Kazemi / Hickman discloses the system of claim 14, wherein said load balancing agent is further operable to determine a load on a given back-end server. (Kazemi, Col 16 lines 48-57)

As per claim 16, Kazemi / Hickman discloses the system of claim 14, wherein said load balancing agent is further operable to determine a stress factor for ones of the back-end servers. (Kazemi, Col 15 lines 49-63, Col 16 lines 48-57)

As per claim 17, Kazemi / Hickman discloses the system of claim 16, wherein the stress factor for a given one of the back-end servers is based on the performance

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metric and the load on a given of the given one of the back-end servers. (Kazemi, Col 15 lines 49-53)

As per claim 18, Kazemi / Hickman discloses the system of claim 17, wherein said load balancing agent is able to determine which server of said back-end servers to route a request to based on the stress factor. (Kazemi, Col 16 lines 17-24)

As per claim 19, Kazemi / Hickman discloses the system of claim 14, wherein the performance metric is a response time. (Kazemi, Col 6 lines 25-40)

As per claim 20, Kazemi / Hickman disclose the system of claim 17. Hickman fails to disclose wherein said load balancing agent is able to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to. Hickman discloses wherein said load balancing agent is able to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to. (Col 8 lines 14-18, Col 11 lines 25-36, Figure 3) In reference to KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007), it would been obvious and yielded predictable results to include back-end servers that the load balancing agent did not discover in the determination of which server to route the request to in the disclosure of Kazemi to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

(10) Response to Argument

Applicant argues 1. Whether Claims 1-20 stand rejected under 35 U.S.C. 103(a) as being obvious over Kazemi (7,089,281) in view of Hickman (US 6,523,026).

Applicant argues: that Kazemi fails to teach or suggest “monitoring for servers that are able to respond to requests directed at the system, including actively discovering new servers in said system of servers” and Kazemi fails to teach or suggest “determining a performance metric for the first set of servers discovered by said monitoring”

Examiner’s Response to 1)

In response to applicant’s remark that Kazemi is used for “storage resources” as opposed to “server resources”, Kazemi fits a common definition of a server resource environment as it is directed to balancing load between servers through a DSR (dynamic session redirector). Kazemi discloses per Col 2 lines 3-15, “This load balancing may be performed in order to respond to variations in activity or demand for particular resources, in response to failures of individual components within the storage system, or in response to expected variations in activity or demand.” The activity or demand is interpreted as the performance metric or criteria in which to route a request and balance the load between the servers.

In response to applicants Kazemi fails to teach or suggest “monitoring for servers that are able to respond to requests directed at the system including actively discovering news servers in said system of servers”, examiner relied on Hickman, not

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Kazemi in the previous office action to disclose this feature. Hickman discloses an active discovery process by monitoring for servers that are available to satisfy requests for a failed server per Col 3 lines 4-11, "The system also provides for very high availability (HA) through its use of clustering. Because each of the machines in a server cluster is an identical replica of every other machine in the cluster, if that server fails, the problem is masked from the applications. The failed machine is removed from the system and the other replica servers in the cluster are available to satisfy requests for the failed server, without any impact to the application." The above passage describes an active monitor or discovery process to find another replica servers in the cluster that are able to satisfy the request for the failed servers.

Kazemi discloses per Col 2 lines 3-15, "By allowing the DSR to reassign resources in this way, client sessions and connections may be maintained without interruption even when components fail or the resources involved in existing connections are remapped to other servers during a session". Examiner have pointed out , in contrast to applicants argument, that the DSR is performing an active monitoring process to find servers that are able to respond to requests directed at the system.

Kazemi discloses an active monitoring process per Col 15 line 54—Col 16 line 8, "monitors the amount of activity and usage of each of the servers to which it is connected. The monitored parameters of the servers 210 may include such information as the hit rate on that server, the network activity experienced by the server, the CPU utilization of the server, the memory utilization of the server, or such other parameters as are known in the art to related to the load placed upon the server 210".

In contrast applicant's argument "populating the resource table as information is received from servers 210 as they come online" is a passive process, examiner argues that Kazemi discloses per Col 11 lines 34-39 that the resource management process is the DSR is able to respond based upon the information it already has in the resource table.

In response to applicant's argument that Kazemi fails to teach or suggest discovery of any kind, examiner reiterates that Hickman, not Kazemi, was relied upon in the office action to disclose a discovery process of a server that is able to respond to requests as discussed above per Col 3 lines 4-11.

In response to applicant's arguments that discovery would not be an obvious modification to Kazemi as discovery would significantly decrease performance, examiner points out the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration include statements regarding unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant.

Hickman is combinable with Kazemi as both are in the same field of endeavor as Kazemi concerns with solving the problem responding to failures of individual components within the storage system, or dealing with the expected variation in activity or demand as indicated per Col 2 lines 3-15, "This load balancing may be performed in

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order to respond to variations in activity or demand for particular resources, in response to failures of individual components within the storage system, or in response to expected variations in activity or demand.” Hickman was directed to active discovery process by monitoring for servers that are available to satisfy requests for a failed server. The combination of Kazemi and Hickman is proper under KSR International Co. v. Teleflex Inc., 550 U.S. -, 82 USPQ2d 1385 (2007) to achieve the predictable results of a load balancing system which reliable, highly scaleable, and provide easy migration from existing products despite hardware or software failures.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner’s answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Chirag R Patel/

Examiner, Art Unit 2454

Conferees:

/Nathan J. Flynn/

Supervisory Patent Examiner, Art Unit 2454

/John Follansbee/

Supervisory Patent Examiner, Art Unit 2451